

ChemCatalyst (Copy and answer the questions on the left page)

There are two bottles on a shelf in a chemistry lab. Both contain a shiny metal substance that resembles gold. Bottle A is labeled Au(s) . Bottle B is labeled $\text{FeS}_2(\text{s})$.

- ✧ Do you think both bottles contain gold? Why or why not?
- ✧ What do you think the symbols on the bottles mean?

The Big Question

- What do the chemical symbols tell us about the substance inside the bottle?

Activity

Purpose: The goal of this lesson is to give you practice making sense of some of the “language” of chemistry, and translating chemical names and formulas.

	Name	Chemical formula	Description
Vial 1	Sodium Nitrate	$\text{NaNO}_3(\text{aq})$	clear liquid
Vial 2	copper nitrate		
Vial 3			blue-green crystals
Vial 4			
Vial 5		$\text{NaNO}_3(\text{s})$	
Vial 6			
Vial 7			
Vial 8			
Vial 9	nitric acid		

	Name	Chemical formula	Description
Vial 10			fine, brown powder
Vial 11		$\text{NaOH}(\text{aq})$	
Vial 12			
Vial 13			
Vial 14			clear liquid
Vial 15	zinc sulfate		
Vial 16			
Vial 17		$\text{Cu}(\text{NO}_3)_2(\text{aq})$	
Vial 18			

What are some patterns you observed about these chemicals?

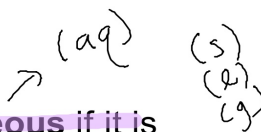
Chemicals w/ (s) are crystals or solid
 Chemical w/ Nitrate in name have NO_3 in formula

Notes (right page)

- An **element** is a unique form of matter that serves as a building material for more complex matter.
- Elements cannot be broken apart into two different substances.
- A **chemical formula** is the set of symbols a chemist uses to represent a compound. Carbon dioxide is a compound. Its chemical formula is CO_2 .
- A **compound** is a substance that consists of two or more elements chemically combined together.

Notes

- A substance is **aqueous** if it is dissolved in water.
- The substance that is dissolved with water is called the **solute**.
- The water is referred to as the **solvent**.



Making Sense (answer on exit ticket and turn in)

When you turned the penny silver on the first day of class, you used zinc, $\text{Zn}(s)$, and sodium hydroxide, $\text{NaOH}(aq)$.

Do you think the penny was coated with silver, $\text{Ag}(s)$? Explain your reasoning.

Check-In (Copy and answer the prompt on the left page)

- Imagine you find a vial that is labeled $\text{Na}_2\text{SO}_4(\text{aq})$. What does the label tell you about what is in this flask?

Wrap-Up

- Chemical symbols represent the elements that combine to form various substances. Each element has either a one or two letter symbol. The first letter is always capitalized, the second letter is always lower case.
- The chemical formula of a substance tells us what elements are in it as well as the relative amounts of each element in that substance.

Cl
CI
Cl

O
H₂O
P₂